

Research Article

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The relationship between child maltreatment and exposure to traumatic events during later adolescence and young adulthood

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Abstract

Objective: The present study investigated the relationship between different types of childhood maltreatment (emotional abuse, sexual abuse, multiple abuse types, and no abuse) and the occurrence of later traumatic events during later adolescence and young adulthood.

Method: Data were collected from a Danish national study conducted by The Danish National Centre for Social Research in 2008 and 2009. A sample of 4718 young adults who were 24 years old was randomly selected using the total birth cohort of children born in 1984. A structured interview was conducted during which participants were asked about a range of traumatic and abusive experiences.

Results: A response rate of 63% was achieved for a total sample size of 2980. Chi-squared analyses revealed significant relationships between all child maltreatment groups and direct exposure to 10 of the 13 traumatic events; there were also significant relationships between all child maltreatment groups and indirect exposure to 12 of the 13 traumatic events.

Conclusion: The results showed that childhood maltreatment was associated with increased risk of exposure to traumatic events, both directly and indirectly, during adolescence and young adulthood. The findings of this study suggest there is an increased risk of being exposed to both direct and indirect traumas during later adolescence and young adulthood after any form of child maltreatment.

Keywords: abuse typologies; adolescence; child maltreatment; exposure; traumatic events; young adults

Introduction

Child maltreatment is an increasingly debilitating societal and psychological problem (1-3), with prevalence rates ranging from 4% to 55% across the world (4). The consequences can be both severe and long-lasting (5,6), and may further increase an individual's risk of developing psychological disorders later in life (2,7). The literature generally refers to four categories of child maltreatment: i) physical abuse; ii) sexual abuse; iii) emotional abuse; and iv) physical and emotional neglect (8-10). However, there are some limitations to the use of these categories in child abuse research. One problem is the lack of precise definitions of each of these categories. For example, the definition of sexual abuse includes penetrative contact, non-penetrative contact (e.g., kissing, fondling), and non-

contact (e.g., sexual talk) (10,11). Physical abuse is also often presented with a broad definition (10). This leads to a lack of clarity regarding what actually constitutes sexual and physical abuse, which makes it more challenging to conduct reliable clinical research. A second limitation that complicates research relates to age discrepancy definitions some researchers apply for what constitutes sexual abuse. For example, for children aged under 13 it is considered sexual abuse if the perpetrator is five or more years older, whereas in older children (13-16 years) the perpetrator must be at least 10 years older (11,12). Finally, within the child maltreatment field there is a stronger focus on the effects of sexual and physical abuse (13,14), despite the fact that neglect and emotional maltreatment are more common. A possible reason for this is that these types of abuse

are harder to detect and often under-reported to the authorities (9,15). For example, it is difficult to recognize the effects of emotional abuse on a child, despite the observable elements of this type of maltreatment (e.g., damaging interactions) (8,9,16).

Recently, Armour, Elklit, and Christoffersen (17) performed a latent class analysis on 20 questions pertaining to specific types of maltreatment: physical abuse, sexual abuse, psychological abuse, and neglect. The latent class analysis revealed a four-class model: a non-abused group, an emotionally abused group, a sexually abused group, and a multiple abuse types group, which included physical and emotional abuse and neglect. A particular strength of the study was that it included a representative sample of the full adolescent population of Denmark, and thus it was the first study to investigate and uncover abuse typologies at a population level (17). An important finding from this study was the emergence of a multiple abuse group (consisting of 2% of the sample), which is often unaccounted for in child maltreatment studies. This group also had the highest probabilities of endorsing all physical abuse, psychological abuse, and neglect items and the second highest probabilities of endorsing the sexual abuse items (17). This is in line with other research that has demonstrated that re-victimization and exposure to other types of maltreatment is more likely among children who have been maltreated previously (18,19). One possible explanation for this is the dysfunctional environment in which these children have grown up. However, the concept of re-victimization assumes that there is a period during which there is no abuse exposure.

In three Nordic societies, the prevalence of direct or indirect exposure to traumatic events among 14- and 15-year-old children has been reported to range from 70% to 90% (20-23); such exposure includes events such as the death of a family member and a serious accident. Despite this high prevalence rate, the majority of the re-victimization literature appears to focus on the relationship between child maltreatment and sexual re-victimization. There is also little research investigating indirect exposure to trauma after childhood maltreatment.

A study by Fergusson and Lynskey (24) examined the relationship between physical punishment during childhood and adjustment during young adulthood. Retrospective measures of parental punishment were assessed in a New Zealand sample ($N = 1025$). Findings indicated that 10% of parents never used physical punishment; whilst the majority reported parents rarely used physical punishment (78%), 8% reported regular physical punishment, and 2% reported frequent and severe physical punishment (24). The authors also found that children who received regular and severe physical punishment

from at least one parent were up to four times more likely to experience re-victimization and poor mental health outcomes as compared with those who received no or seldom physical punishment. The researchers concluded that there was a clear link between exposure to physical abuse during childhood and later re-victimization (both physical and mental) (24).

Recently, Scott and colleagues (25) found co-occurring childhood adversities were associated with a range of physical health conditions during adulthood. For example, exposure to sexual abuse during childhood conferred a fourfold increase in risk of heart disease during adulthood. This study was unique in that its cross-sectional design recruited adults from the general populations of 10 different countries (including North and South America, Europe, and Asia), which resulted in a culturally diverse sample.

Other studies have examined the links among demographic risk factors (e.g., gender), individual factors (e.g., oppositional defiant disorder [26]), and exposure to traumatic events. For example, a recent study by Chemtob, Gudino, and Laraque (27) found that the children of mothers with depression, post-traumatic stress disorder, or both, were exposed to significantly more traumatic events than the children of mothers with no diagnoses. The children in this study were between three and five years old, therefore information was provided by their mothers using the Traumatic Events Screening Inventory–Parent Report Revised (28). However, given the mothers' own psychological disorders, it is possible that their perceptions of their children's experiences may have been distorted, thereby resulting in unreliable findings.

The purpose of the present study was to extend the literature addressing the relationship between child maltreatment and exposure to later traumatic events or re-victimization. The types of maltreatment categories used in this study were sexual abuse, emotional abuse, multiple abuse types (including physical and emotional abuse and neglect), and no abuse, as identified by Armour and colleagues (17). It was expected that those who had experienced some type of maltreatment during childhood would present with more traumatic events during adolescence (>13 years old) and young adulthood (<24 years old). To date, there is no research comparing the outcomes of the different maltreatment groups identified by Armour and colleagues (17) or any evidence of indirect exposure to trauma in adolescents or young adults. In this study, indirect exposure to trauma is defined as witnessing or hearing about an event that affected an immediate family member.

This article will therefore attempt to address these topics with the use of a representative sample of Danish young adults. The specific aims of the present study are presented in the following paragraphs.

Aims of the Study

The overall aim of this study was to examine the relationship between different types of child maltreatment with exposure to traumatic events during adolescence and young adulthood. More specifically, the purposes of this paper were to examine the following:

- The relationship between child maltreatment typologies (emotional, sexual, multiple abuse types, and no abuse) and direct exposure to traumatic events during adolescence and young adulthood (i.e., between 13 and 24 years of age)
- The relationship between child maltreatment typologies and indirect exposure to traumatic events during adolescence and young adulthood
- Whether direct and indirect exposure to trauma occurs more frequently among individuals who experienced particular types of maltreatment during childhood
- Whether there was a differential effect of exposure to traumatic events in the child maltreatment group with non-maltreated participants (i.e., the no abuse group)

Method

Participants

The study used a stratified random probability sample of young Danish adults who were 24 years old. Data were collected from a Danish national study conducted by The Danish National Centre for Social Research in 2008 and 2009. A sample of 4781 young adults was randomly selected by Statistics Denmark, which used the total birth cohort of all children born in 1984. A response rate of 63% left the researchers with 2980 completed interviews. The reasons given for not participating in the study were participants refusing to take part, not being able to get hold of participants, or illnesses and disabilities. The frequency data of these three categories within the non-response group were not investigated further. Table 1 summarizes the demographic information of the sample. A child protection case was defined as a case for which the Danish authorities (according to the files of local social workers) had provided support for the child and the family or placement of the child with a foster family as a result of concerns about the well-being and development of the child. All demographics were analyzed with the use of a weight variable to account for the oversampling of child protection cases.

TABLE 1. A Summary of the Demographic Information of the Sample

Demographic Category	Percentage
Gender (Male)	52%
High school education	46%
Higher education	37%
Full-time employment	38%
Private accommodation (owned or rented)	94%
Married or cohabiting	46%
Child protection case	6%

Measures

Childhood maltreatment was assessed retrospectively with the use of a self-report survey that included 20 items that were indicative of an abuse domain: sexual abuse (3 items), physical abuse (5 items), emotional abuse (6 items), and emotional and physical neglect (6 items). Here is a sample question from the questionnaire: “Were you ever expected to attend school in dirty clothes because there were no clean ones available?” All responses were answered “yes” or “no” (yes = 0; no = 1) in relation to whether the events described occurred or not.

To assess traumatic experiences, participants were presented with a list of potentially traumatizing events and asked to identify the events to which they had been exposed. They were then asked to indicate whether the exposure was direct (self) or indirect (through a family member). These events were related to experiences that occurred during adolescence or early adulthood (i.e., between the ages of 13 and 24 years). Participants were asked if they (direct) or any of their immediate family members (indirect) experienced the following events: traffic accident, fire, other accident, physical assault, threats of being beaten, drowning, robbery, maltreatment, rape, death, serious physical illness, mental illness, and sexual assault. The events were selected from the literature (29) and clinical experience and covered a broad spectrum of possible life-threatening experiences and distressing conditions. Previous studies have demonstrated that the included events are frequently experienced by youths across nations and cultures and that these events may be potentially traumatizing (22).

Procedure

Participants were contacted in writing regarding the nature of the research and told that the study would include being interviewed in the home; the procedures for securing confidentiality were also described. Those who did not respond to the letter were contacted by telephone, if possible, and then eventually contacted in person at their home addresses. At least six contact attempts were made to reach each member of the non-responding group.

These attempts were conducted at different times of the day and on different days of the week. Participation in the study was voluntary for all participants.

The interviewers received training from The Danish National Centre for Social Research before the data collection began. This training included detailed oral information and standardized written instructions regarding the purpose and content of the study. Test trials were conducted to familiarize the interviewers with both the questionnaire and the coding procedure. The data was collected with the use of a structured interview, which was conducted as a telephone interview or as a residential interview when a telephone interview could not be obtained. Participants who were interviewed in their homes answered the questions on a computer, with computer-assisted personal interviewing. This allowed participants to enter their responses directly onto a laptop computer. This method of data collection has been validated in similar studies (30). The average duration of the interview was estimated at 43 minutes, and the interview was carried out in Danish. The response format was pre-coded, but there was an option for respondents to add additional information if they felt it was necessary. Finally, all participants were given the opportunity to speak to an experienced psychologist via a telephone helpline after completing the interview. The study was granted ethical approval and was accepted by the Danish Data Protection Agency.

Statistical Analysis

All analyses were conducted with the use of Statistical Package for the Social Sciences software, version 22 (IBM, Armonk, New York). As mentioned previously, the data were weighted to account for the child protection cases present in the sample. Frequency data for the different maltreatment categories were obtained. Given that the data were categorical, chi-squared analyses were conducted to examine the relationship between the following: 1) child maltreatment categories and direct exposure to traumatic experiences; and 2) child maltreatment groups and indirect exposure to traumatic events experienced by a family member.

Results

Descriptive data

Two hundred and sixty-three participants (8.8%) reported being emotionally abused as children, 59 participants (2%) reported being sexually abused, and 64 participants (2.1%) reported multiple abuse types (including physical and emotional abuse and neglect).

The remaining 2593 individuals (87.1%) reported no abuse.

Table 2 shows the frequencies of direct and indirect exposure to the 13 different traumatic events, irrespective of the abuse categories.

TABLE 2. Frequency of Direct and Indirect Traumatic Experiences

Traumatic Experience	Direct (Personal Experience)	Indirect (Experience of Family Member or Friend)
Traffic accident	275	637
Fire	60	180
Other accident	83	307
Physical assault	344	338
Threats of being beaten	647	410
Drowning	187	170
Robbery	228	429
Physical maltreatment	65	126
Rape	51	79
Death	1839	685*
Serious physical illness	102	1190
Mental illness	260	986
Sexual assault	34	81

*Indirect exposure to death would be learning about the death of a close friend or family member.

Relationships between child maltreatment groups and direct exposure to traumatic events

The chi-squared analyses revealed significant relationships between all child maltreatment groups and 10 of the 13 traumatic events (i.e., other accident, physical assault, threats of being beaten, drowning, maltreatment, rape, death, serious illness, mental illness, and sexual abuse). Table 3 presents the number of participants within each maltreatment group who were exposed directly to the different traumatic events, along with the percentages of exposure in brackets. Only one traumatic event (fire) produced non-significant results.

Relationships between child maltreatment groups and indirect exposure to traumatic events

The chi-squared analyses revealed significant relationships between all child maltreatment groups and 12 of the 13 traumatic events. The only non-significant relationship was between all child maltreatment groups and indirect exposure to drowning ($\chi^2[3, N = 7.51]; p = .06$). Table 4 presents the number of participants within each maltreatment group who were indirectly exposed to the different traumatic events, along with the percentages.

TABLE 3. Chi-Squared Analysis Results of the Relationships Between Child Maltreatment Groups and Direct Exposure to Traumatic Events

Traumatic Event	Emotional Abuse (n = 263)	Sexual Abuse (n = 59)	Multiple Abuse Types (n = 64)	No Abuse (n = 2593)
Traffic accident (ns)	22 (8)	7 (12)	13 (20)	233 (9)
Fire (ns)	10 (4)	2 (3)	3 (5)	47 (2)
Other accident*	12 (5)	6 (10)	5 (8)	61 (2)
Physical assault*	56 (21)	17 (29)	17 (27)	254 (10)
Threats of being beaten*	106 (41)	19 (32)	26 (41)	496 (19)
Drowning*	22 (8)	7 (12)	10 (16)	149 (6)
Robbery (ns)	30 (12)	8 (13)	7 (11)	183 (7)
Physical maltreatment*	11 (4)	13 (22)	25 (40)	16 (1)
Rape*	2 (1)	25 (43)	8 (13)	16 (1)
Death*	194 (74)	45 (75)	41 (64)	1559 (60)
Serious physical illness*	12 (5)	3 (5)	9 (14)	78 (3)
Mental illness*	51 (19)	22 (37)	23 (36)	164 (6)
Sexual abuse*	19 (7)	9 (15)	6 (9)	44 (2)

Percentages are presented in parentheses

*Significant results at $p = .001$

(ns), Non-significant results

TABLE 4. Chi-Squared Analysis Results of the Relationships Between Child Maltreatment Groups and Indirect Exposure to Traumatic Events Through Family Members

Traumatic Events	Emotional Abuse (n = 263)	Sexual Abuse (n = 59)	Multiple Abuse Types (n = 64)	No Abuse (n = 2593)
Traffic accident*	55 (21)	23 (38)	26 (41)	486 (19)
Fire*	18 (7)	12 (20)	7 (11)	144 (6)
Other accident*	41 (16)	14 (23)	15 (23)	237 (9)
Physical assault*	55 (21)	9 (15)	18 (29)	255 (10)
Threats of being beaten*	56 (21)	16 (27)	27 (42)	311 (11)
Drowning (ns)	18 (7)	5 (9)	8 (13)	139 (5)
Robbery*	46 (18)	12 (20)	19 (30)	352 (14)
Physical maltreatment*	24 (9)	4 (7)	19 (30)	78 (3)
Rape*	13 (5)	4 (7)	7 (11)	54 (2)
Death*	73 (28)	14 (24)	29 (46)	568 (22)
Serious physical illness*	132 (50)	30 (51)	35 (55)	993 (39)
Mental illness*	131 (50)	29 (49)	41 (64)	785 (30)
Sexual abuse*	25 (10)	4 (7)	8 (13)	140 (5)

Percentages are presented in parentheses

*Significant results at $P = .001$

(ns), Non-significant results

Discussion

The aim of the current study was to examine the relationship between child maltreatment and later exposure to traumatic events during adolescence and young adulthood.

Frequency of trauma exposure

The current findings indicated that death of a loved one was the most commonly reported traumatic experience in the overall sample (62%) and exposure to a fire was the least common (2%). The most prevalent indirect exposure to a traumatic event was serious physical illness (40%), with rape being the least prevalent (2.6%). Interestingly, these findings suggest that traumatic experiences during adolescence and young adulthood are quite common, given that the majority of participants (87%) reported no abuse during childhood. It could be argued that the reason for death being the most common form of direct trauma is due to the fact that it is an innate event (31). In other words, unlike the other traumatic

events (e.g., sexual assault), death is a natural part of life rather than an event that is forced upon an individual. When considered together with the research on the co-occurrence rates of different abuse types (32) and the negative consequences that follow abuse (3,33), the results of the present study seem plausible. The same conclusions could be drawn for physical illness, which was found to be the most frequent indirect traumatic experience. Physical illness can also be considered a natural part of the life cycle, at least in comparison with rape, which was found to be the least prevalent traumatic experience.

Direct exposure to traumatic events

The analyses of child maltreatment groups and direct exposure to traumatic events revealed significant results for almost all events assessed (see Table 3). This suggests that abuse groups differed significantly with regard to their exposure to traumatic events after child maltreatment. In all abuse groups, direct exposure to death was the most prevalent traumatic

event, with the sexual abuse group reporting the highest prevalence of exposure (75%). This was followed by emotional abuse (74%), multiple abuse types (64%), and no abuse (60%).

In the emotional abuse group, the second most prevalent traumatic event experienced was threats of being beaten (41%). In the sexual abuse group, the second most common traumatic event experienced was rape (43%). This is an interesting finding as this was the only abuse group in which the second most prevalent experience of re-exposure was to the same type of abuse. In both the multiple abuse and no abuse groups, the second most prevalent traumatic event was threats of being beaten (41% and 19%, respectively). The least common traumatic event experienced after emotional abuse or no abuse in childhood was rape (1% in both groups), whereas in the sexually abused group it was serious physical illness (5%); and other accidents in the multiple abuse group (8%). There were no significant differences with regard to direct exposure to traffic accident, fire, and robbery across the maltreatment categories.

Indirect exposure to traumatic events

The analyses of child maltreatment groups and indirect exposure to traumatic events produced significant results for most traumatic events, except for indirect exposure to drowning (see Table 4).

The multiple abuse group reported the highest prevalence of exposure to all indirect traumatic events. The only exception was exposure to fire and physical maltreatment, in which case it has the second highest and lowest prevalence, respectively. The multiple abuse types group were exposed to three forms of abuse: physical abuse, emotional abuse, and neglect. The finding that witnessing physical maltreatment in the family was less prevalent seems unexpected; it would seem more reasonable to expect a high prevalence of maltreatment after childhood abuse. However, this inconsistency may be explained by the very high level of direct exposure, which may indicate the direct exposure's strong emotional impact and the fact that witnessing others being physically maltreated without personal involvement happened rarely.

In addition, the severity of the abuse exposure may explain why this group had the highest prevalence rates of re-exposure to the other indirect traumatic events. It could be argued that there is an exponential rate of risk to indirect exposure to trauma, with increased rates seen in those who have been exposed to more than one form of abuse. Children who have experienced multiple forms of abuse often come from dysfunctional family environments (18) which may be one possible reason for their indirect exposure to a range of traumatic events after childhood abuse.

Collectively, exposure to mental and physical illness were high across the entire sample, with higher rates of endorsement evident in the maltreatment groups. This supports a large body of literature regarding the risk of maltreatment in families with histories of parental mental health problems (34). Similar levels of mental and physical health problems are also not surprising in light of the research evidence that supports the high co-occurrence rates of mental and physical illnesses (35,36). Findings have further indicated that the least commonly reported traumatic experience was indirect exposure to rape (emotional abuse group, 5%; sexual abuse group, 7%; non-abuse group, 2%). There were no differences between the maltreatment groups with regard to indirect exposure to drowning. Nevertheless, the highest prevalence of indirect exposure to drowning existed for the multiple abuse types group (13%).

When considering these results together, it can be concluded that exposure to trauma—whether direct or indirect—is common after child abuse. This is consistent with the literature regarding re-victimization after child abuse. The current findings indicate that direct exposure to physical threats and assault were higher among the child maltreatment groups as compared with the non-abused group. The sexual abuse and multiple abuse types groups displayed high levels of mental illness (37% and 36%, respectively); this supports previous findings regarding the association between childhood abuse and psychiatric problems (2). Furthermore, these groups continued to report similar abuse experiences during adolescence and young adulthood, as evidenced by the high levels of rape in the sexual abuse group (43%) and of maltreatment in the multiple abuse types group (40%). Death was found to be the most prevalent traumatic event when considering direct exposure to trauma, which may not be so surprising given that death is a natural part of life. In terms of indirect exposure to trauma, the results suggest that more than half of the members of each abuse group experienced high levels of familial mental and physical health problems.

Limitations

The findings of the present study must be interpreted within the context of several limitations. First, the study fails to limit re-exposure to trauma to a certain timeframe. The 20 items that pertain to child maltreatment ask specifically about events that occurred before the age of 12 years, whereas direct and indirect traumatic events relate to adolescence and young adulthood. Therefore, we cannot explicitly determine whether there was a period of no abuse between the maltreatment experienced as a child and the re-exposure, although it was assumed

that this was the case. The data from this study were collated as part of a much larger national study, which may be why this information is missing. Second, the study relied on retrospective self-report measures of childhood maltreatment and later exposure to traumatic events. Self-report is subject to social desirability biases, particularly with such a sensitive topic as child abuse, in addition to over-reporting and under-reporting. The retrospective element of the study makes it likely that some events were forgotten or recalled incorrectly at the time of data collection. Third, the results of the current study are based on a 63% response rate. This is considered typical and adequate for population survey data, but the reasons that some individuals declined while others consented remain unclear. It is likely that those individuals who did not participate chose to do so due to their experiences of child maltreatment, which may attenuate the true rate of child maltreatment in a Danish population.

Strengths

Despite these limitations, this study had several strengths that also warrant discussion. First, the study recruited a sample that was representative of the general Danish population. This has obvious advantages, because it gives an unbiased assessment of the true population. Second, the study employed the typologies (emotional, sexual, multiple abuse types, and no abuse) that have also been developed with the use of a representative dataset. This allows for comparisons to be made among the outcomes of the maltreatment groups. Third, all participants who had reported some form of maltreatment during childhood were able to describe their own experiences, rather than requiring investigators to discuss these sensitive issues through the parents or caregivers of affected individuals.

Future research

Future research could expand on the findings of this study by further investigating any gender differences in the relationship between childhood maltreatment and future exposure to traumatic events. This would be particularly interesting given that there are documented gender differences within the abuse categories; for example, females have been found to be more likely to experience sexual abuse than males (37). Research is increasingly identifying the links between child maltreatment and epigenetic mechanisms such as increased DNA methylation and subsequent health consequences. A recent study demonstrated that different epigenetic profiles emerged within a trauma-exposed sample with post-traumatic stress disorder (PTSD) (38), and the findings indicated that DNA methylation changes were much higher among those who had been

exposed to childhood trauma. Future research should explore the influence of epigenetic mechanisms on different abuse typologies. Additionally, research could also address whether certain types of abuse predicts the type and frequency of trauma exposure in later life (e.g., in terms of direct or indirect exposure). Finally examining if childhood maltreatment and re-exposure to trauma in adulthood is associated with the development of PTSD or whether the re-exposure to trauma reduces the risk of PTSD through protective mechanisms.

Summary

This study investigated the relationship between child maltreatment groups and exposure to traumatic events during adolescence and young adulthood, with the use of different abuse typologies. Findings indicated both direct exposure and indirect exposure to a variety of traumatic events were common with all forms of child abuse. In addition, significant differential effects emerged among the abuse groups, which suggests that some forms of abuse place individuals at a heightened risk for continued exposure to trauma.

Conflicts of Interest

The authors declare no conflict of interest.

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